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DEVELOPMENT OF REL/RL, INDONESIA

Hermawan Indrabudi

Bangkok, 9 November2010

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Definitions

Baseline is the sum of *carbon stock* changes that would occur within the boundary of the project area in the absence of the proposed A/R CDM project activity

Reference emissions level (REL) is the amount of gross *emissions* from a geographical area estimated within a reference time period (REDD)

Reference level (RL) is the amount of net/gross *emissions and removals* from a geographical area estimated within a reference time period (REDD+)

REDD-UNFCCC Expert Meeting on "Methodological Issues relating to Reference Emission Levels" (Bonn, 23-24 March 2009

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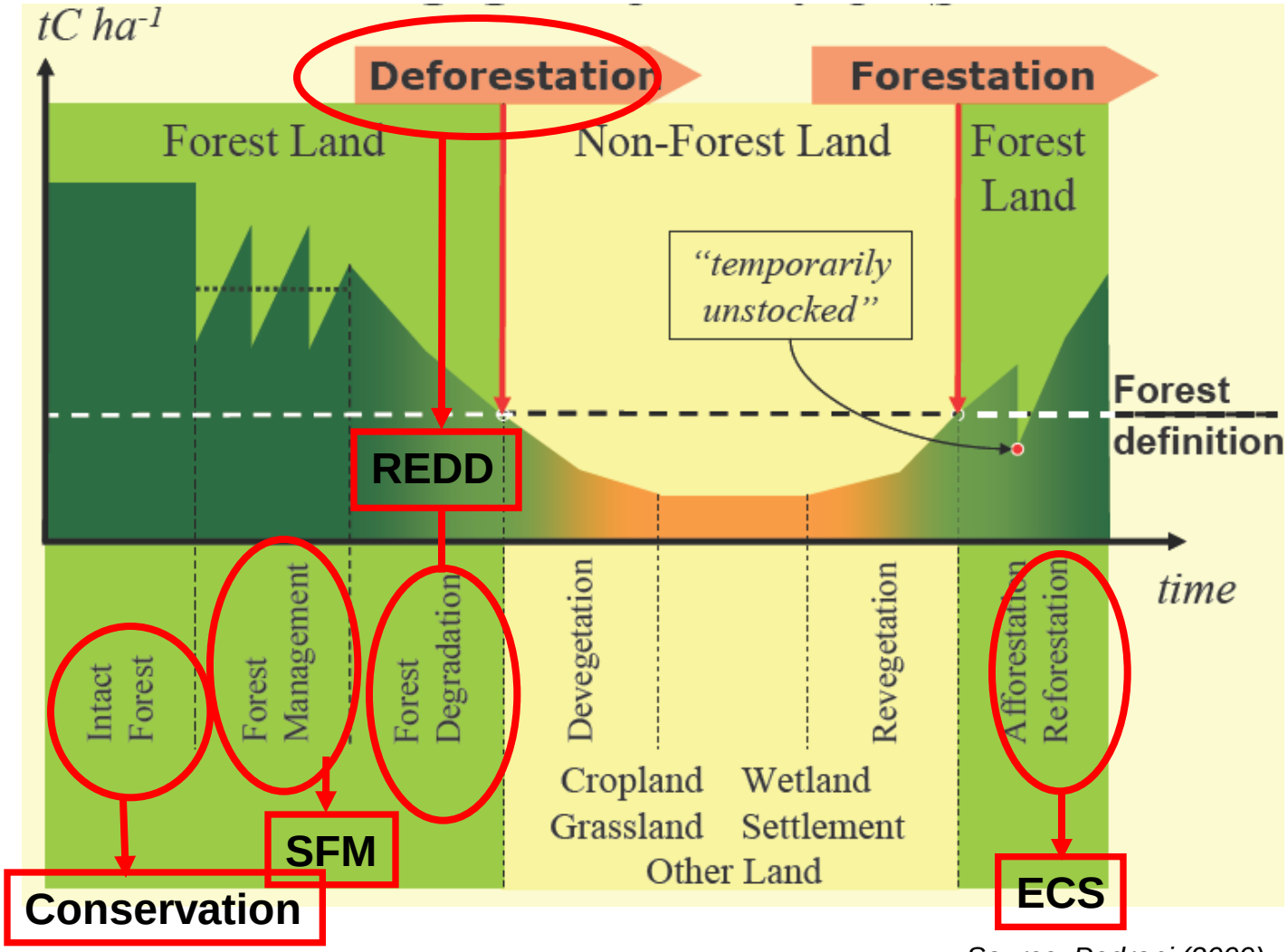
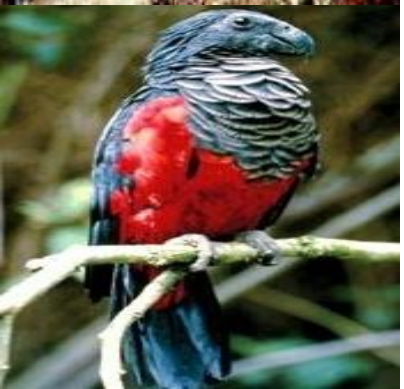
REDD and REDD-plus



Source: Pedroni (2009)



General questions

- **How should REL/RL be set?**
  - Historical/statistic
  - Modeling approach (GDP, population growth)
  - Quota system
- **Who should agree?**
  - The levels (%, rate)
  - Who are the interest groups
- **National or sub-national level?**
  - Is adjustment needed ?
  - Roles of INCAS
- What does it imply in terms of **cost effectiveness?**

Source: Murdiyarso

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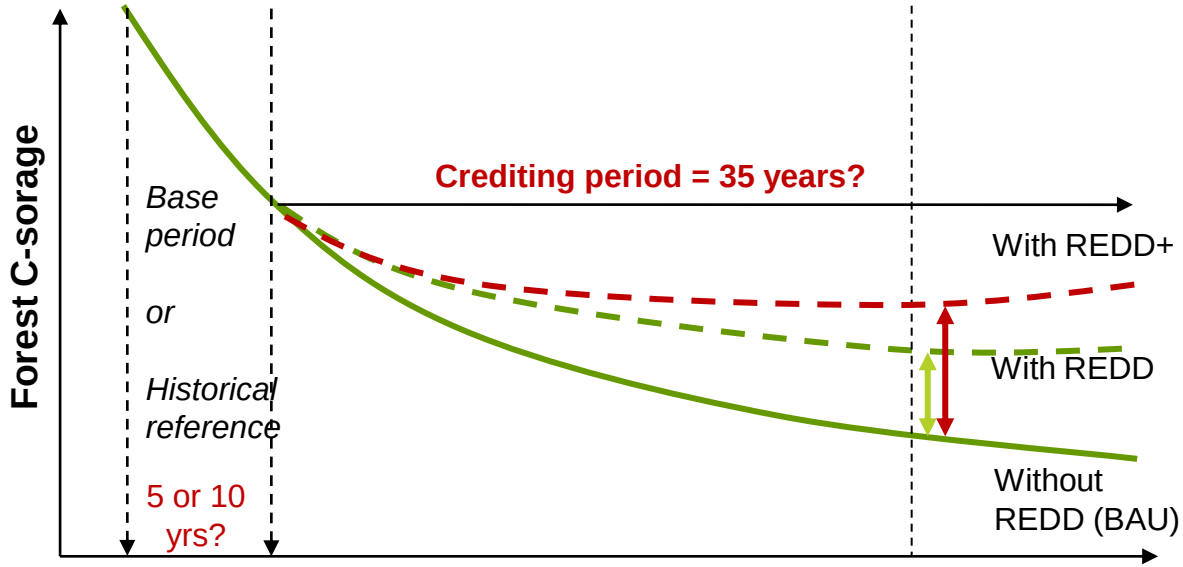
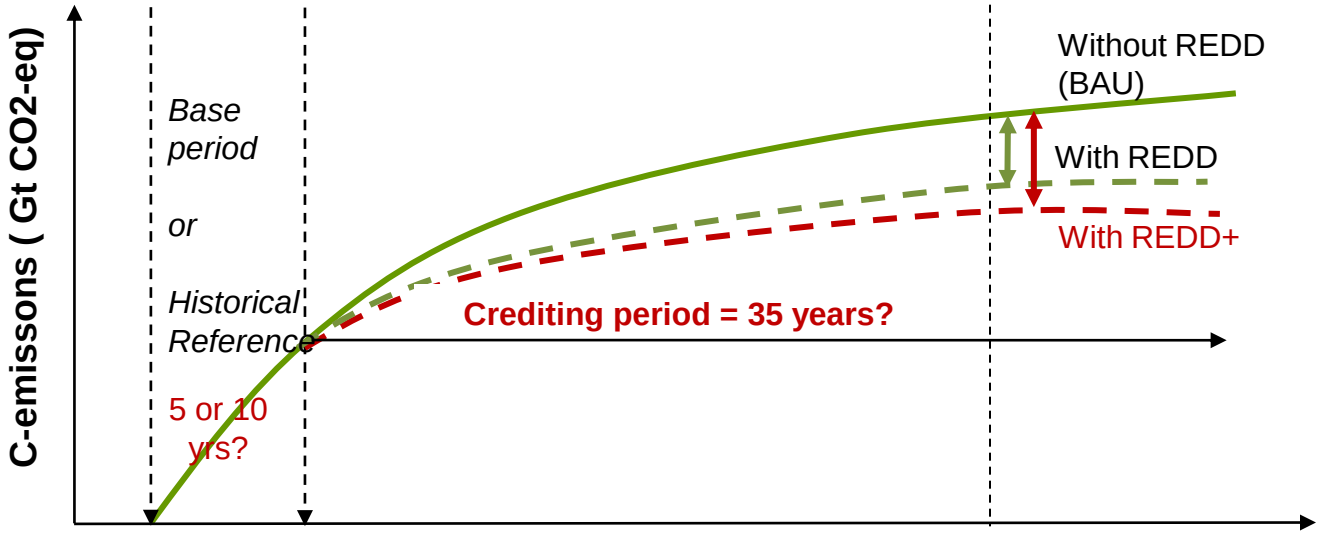
Historical REL/RL



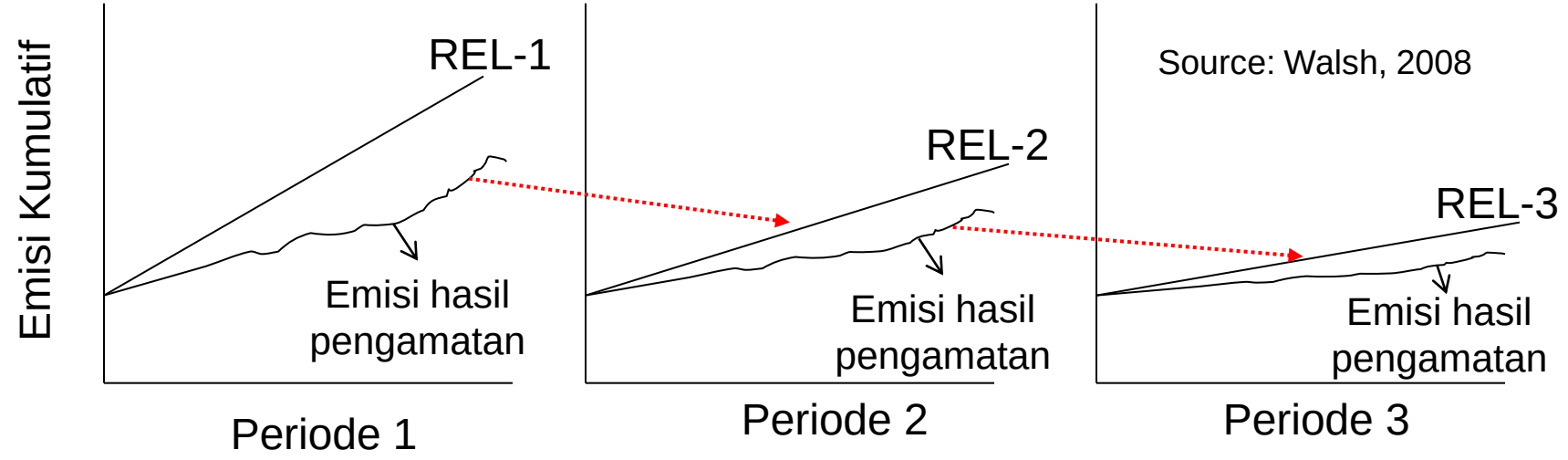


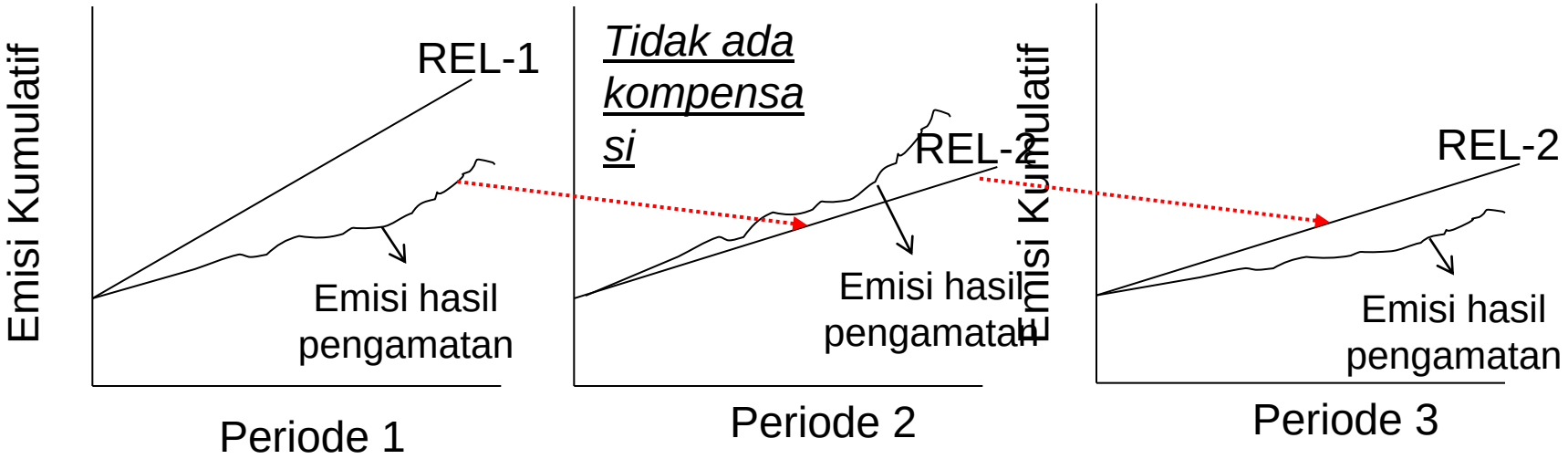
Example of REL modeling based on historical emission

- *Historical Emission :* Assumed that the rate of future emissions is as same as historical emissions (BAU).
- *Adjusted Historical Emission Level:* Assumed that the future emissions (BAU) will follow historical emissions with some adjustments (e.g., change of pop. density, the need of land for agric., GDP, etc. (see Amano *et al.*, 2008)
- *Forward looking Emission Level:* The future emissions, based on various driving factors on/preventing deforestation and extension of agric land in the future (BAU), with or without considering historical emissions. (Source: Rizaldi)

Adjustment of Historical Emissions

Emisi historis untuk REL mungkin tidak efektif untuk jangka panjang karena faktor yang mempengaruhi deforestasi dan degradasi hutan akan banyak berubah. Oleh karena itu ada usulan agar penggunaan emisi historis untuk REL dibatasi untuk satu periode dan kemudian disesuaikan periode berikutnya (e.g.,setiap 5 tahun)





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A quota system?

- Indonesia declares its REL/RL based on the past 5-10 years emission rates
- Indonesia is to set an emission reduction target (national quota) for the next 10 years, *say* 50% below REL/RL
- Participating provinces/districts/ FMU/proponents get the allocated sub national quota
- Credits/debits will be imposed based on the performance in achieving the quota

Source: Murdiyarso

The approach

"Using **combination of remote sensing approach** and **forest carbon terrestrial inventory** by considering antropogenic GHG …….

"Based on **historical data**, considering **trend**, **reference period,** availability of data, and ***other specific national circumstances*** ….

- UN Doc FCCC/CP/2009/11/Add.1 (COP 15 Copenhagen, December 2009)/Add.4/CP.15 Methodological guidance for activities REDD+; Para 1. (d), point (i)./SB28

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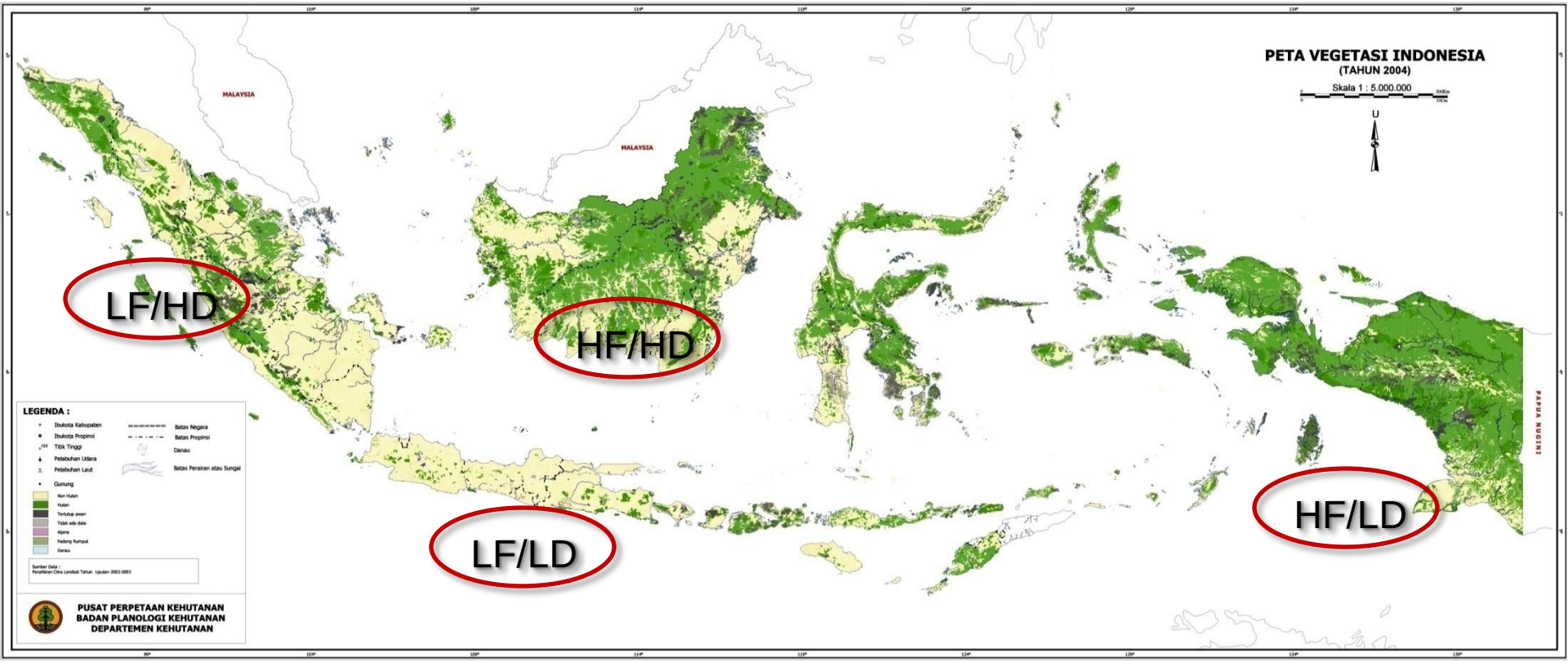
Cluster of forest cover and deforestation rate



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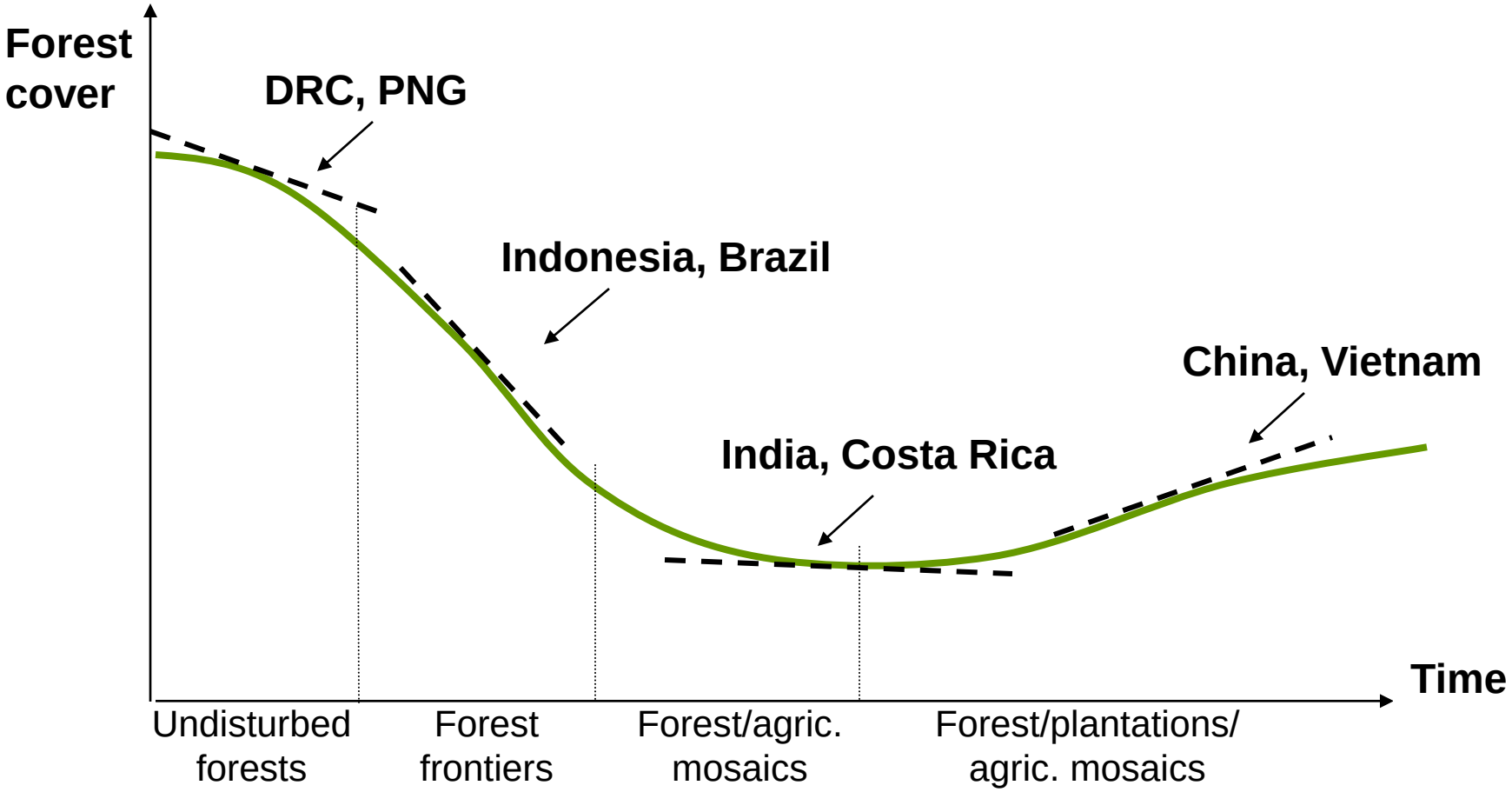
Forest transition - global



Source: Murdiyarso

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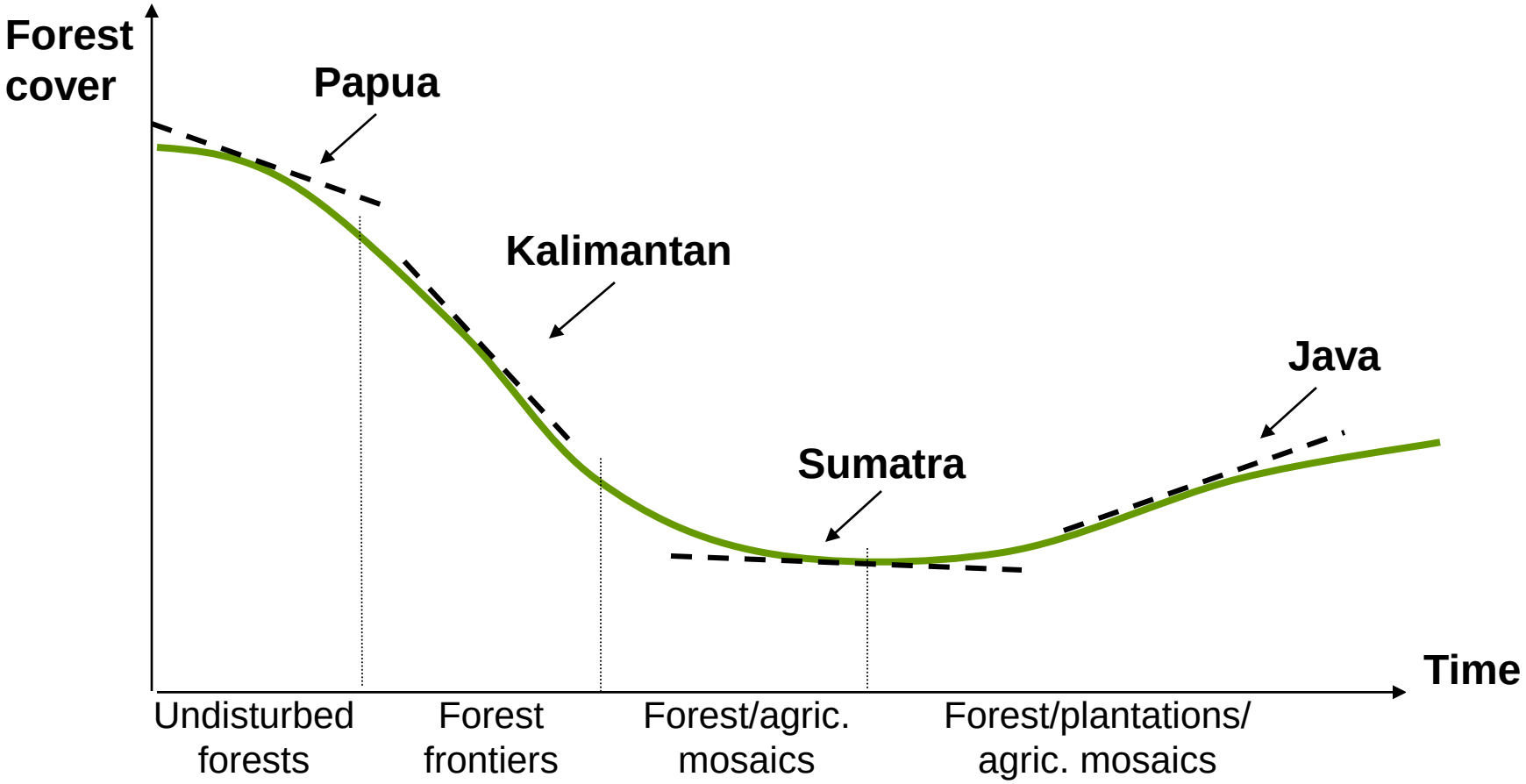
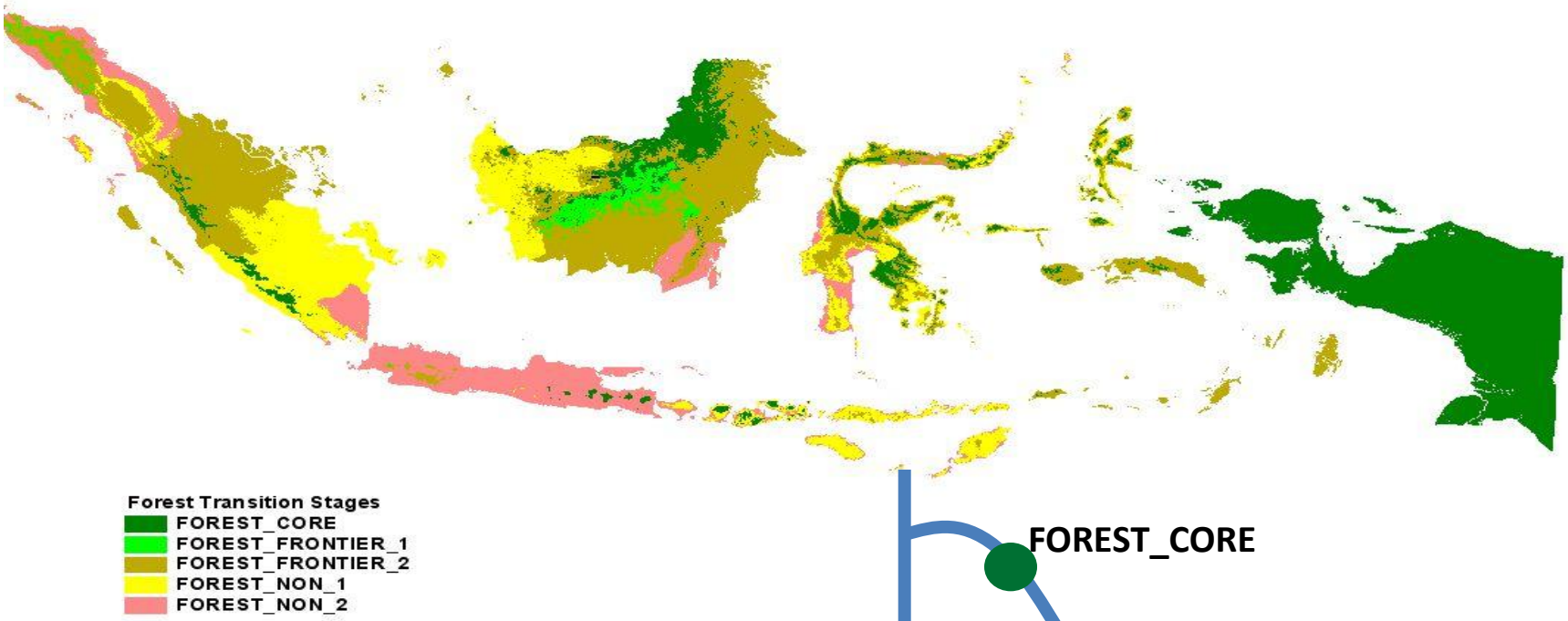
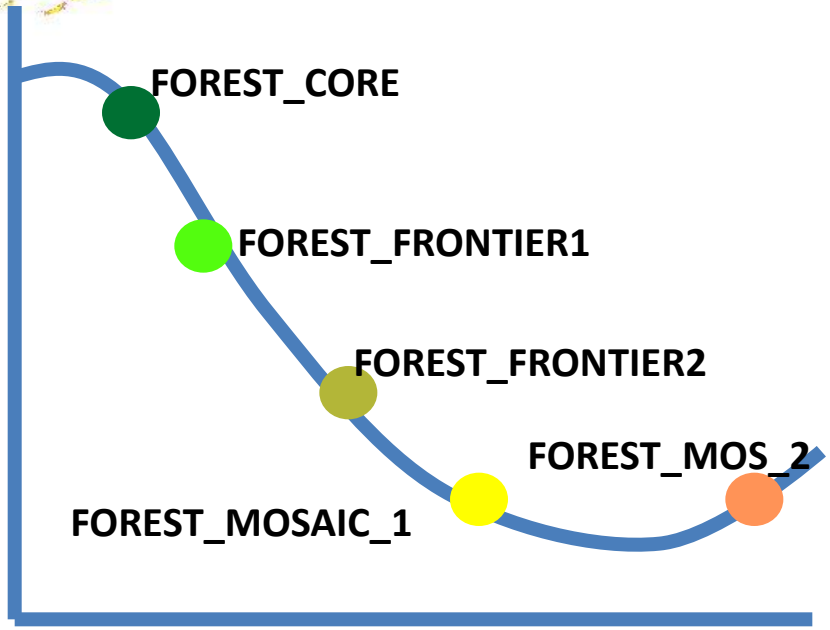
Forest transition - national



Source: Murdiyarso

Forest transition stage



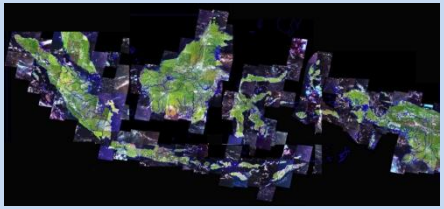


Cluster forest transition stage analysis based on: forest cover proportion, forest configuration, land use trajectory

Source: Dewi, Ekadinata, van Noordwijk, 2009, ICRAF

GHG Inventory for LULUCF (Good practices and Guidelines of the Intergovernmental Panel on Climate Change (IPCC)

ACTIVITY DATA



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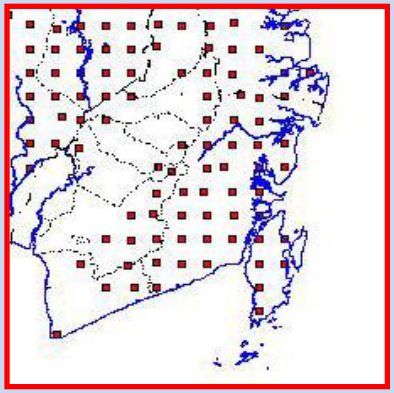
EMISSION FACTOR



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EMISSION ESTIMATE

CO_2 equivalent

Modified from: Alberto Sandoval , Rosa Ramon – UNREDD general and MRV framework COP, 2010

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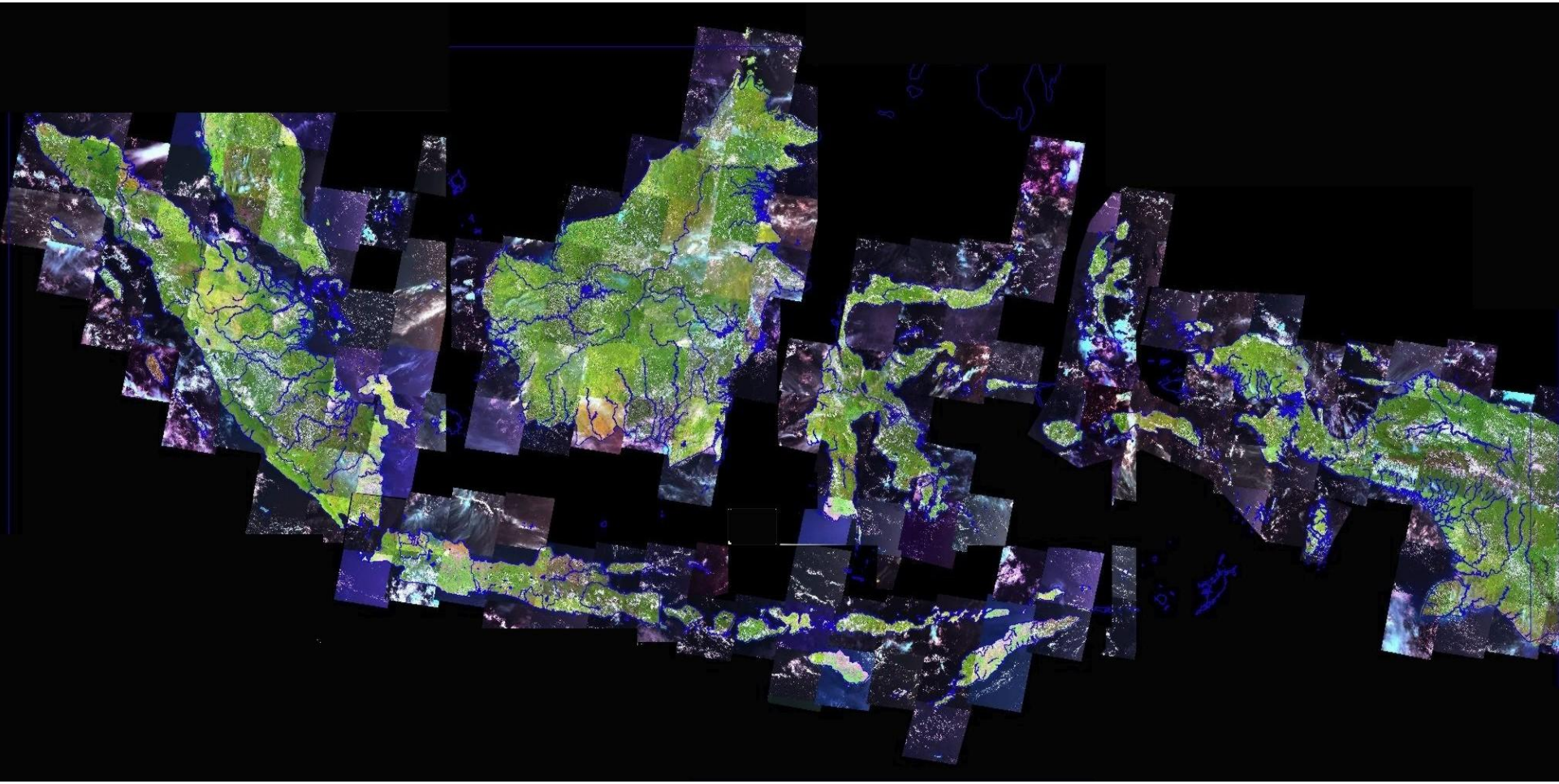
Mosaik Citra Satelit Indonesia



Remark: Landsat 7 ETM+ coverage for the whole Indonesia (217 scene)

Source: MoFor

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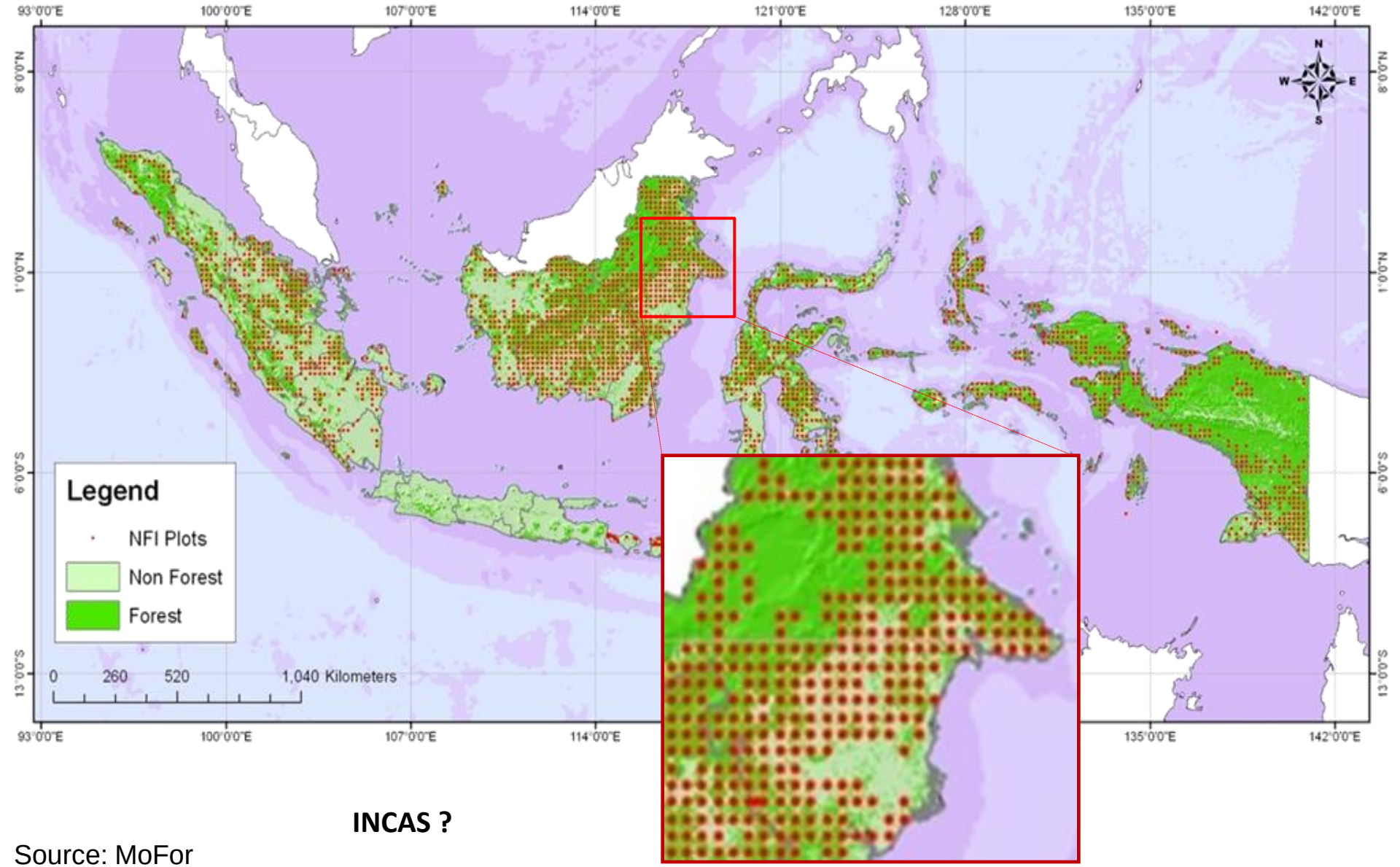
NFI Cluster distribution



INCAS ?

Source: MoFor

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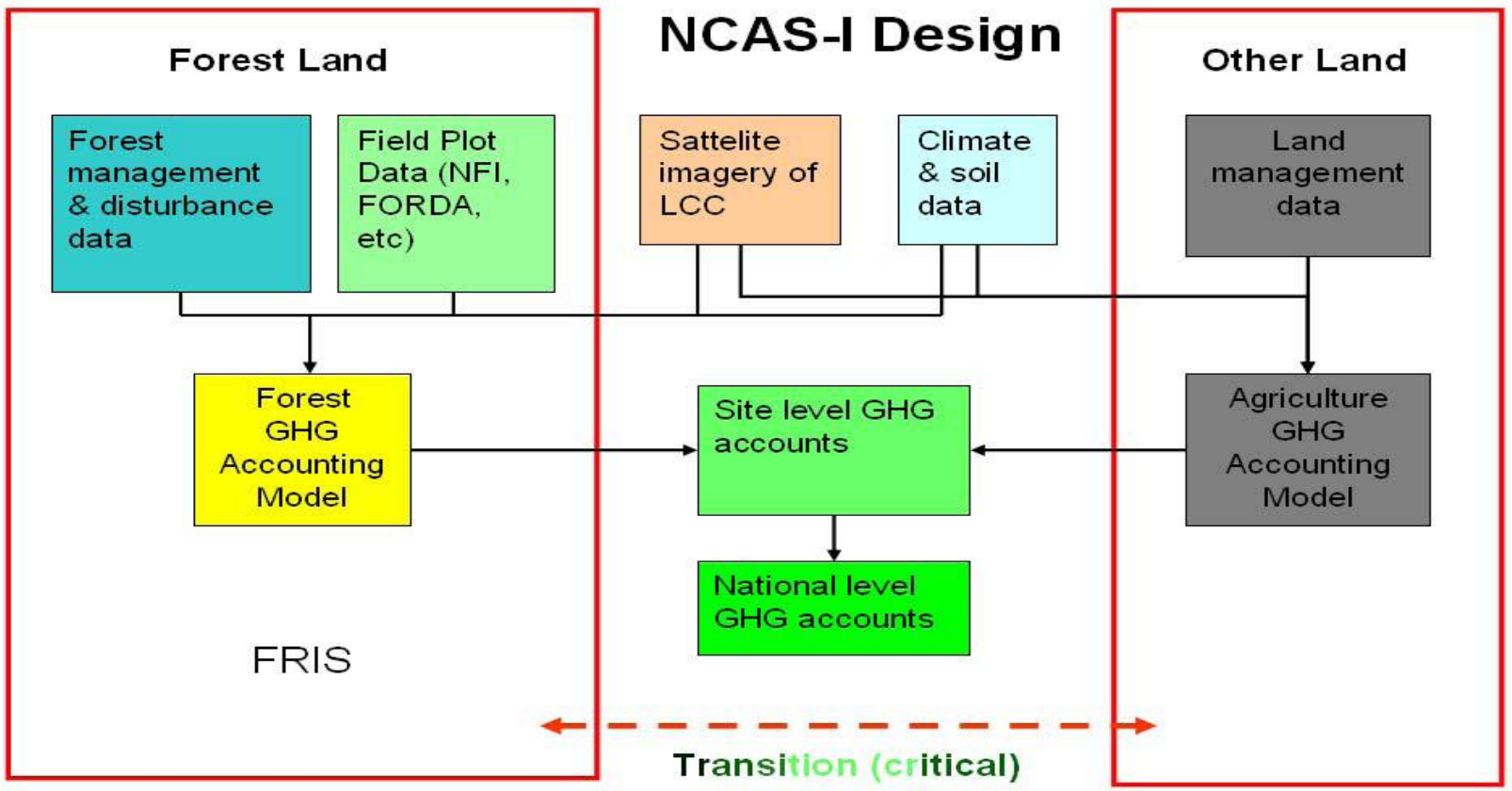
Indonesia National Carbon Accounting System



Source: MoFor

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REL/RL based on historical data, ajusted to the national circumstances

Historical deforestation rate (ha.yr^{-1})*(baseline of deforestation)*

X

Emission factors (eqCO_2.ha^{-1})

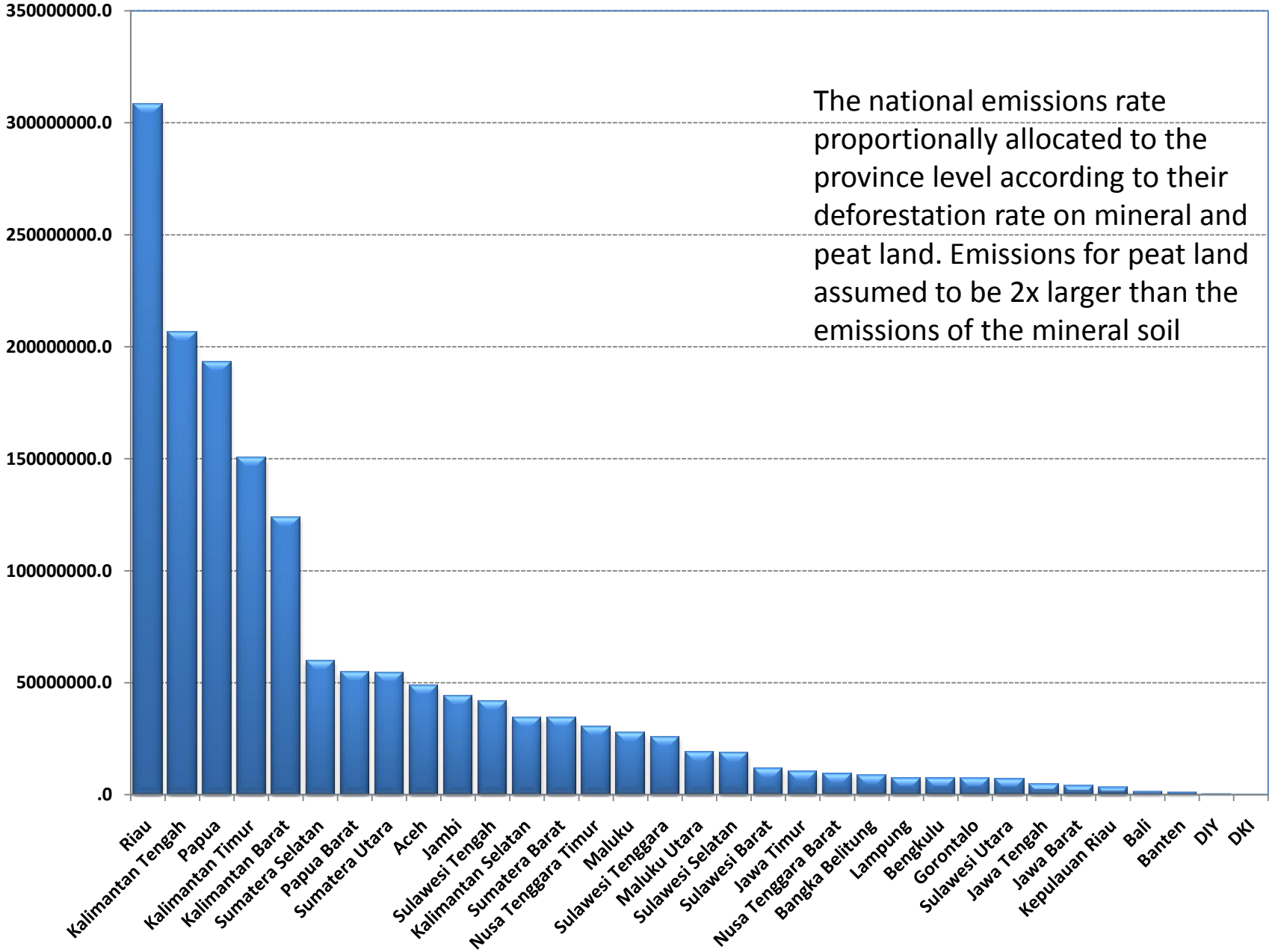
Historical emission rates x Years (eqCO_2)*(reference scenarios)*

+

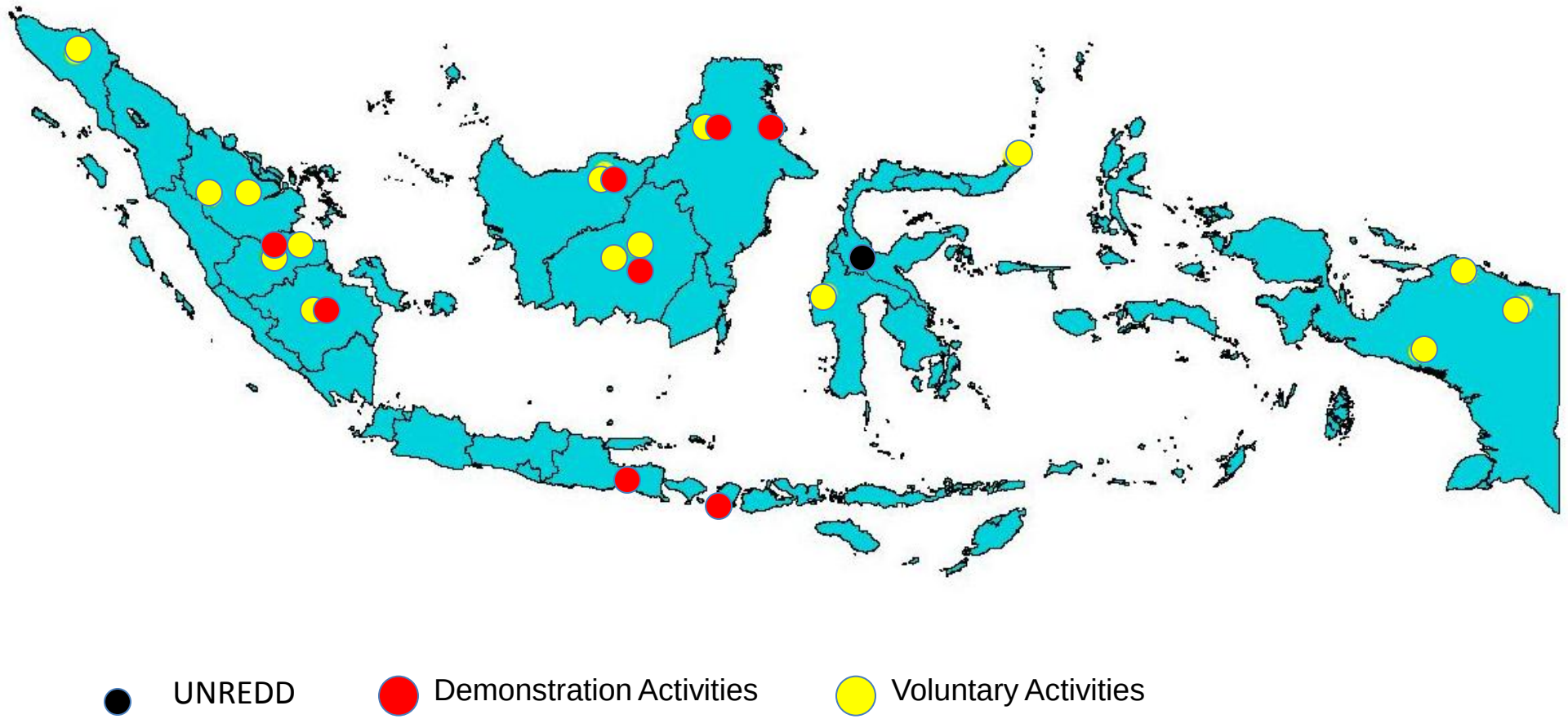
National Circumstances (deforestation projections as part of national circumstances negotiations)

RL/RL (eqCO_2)

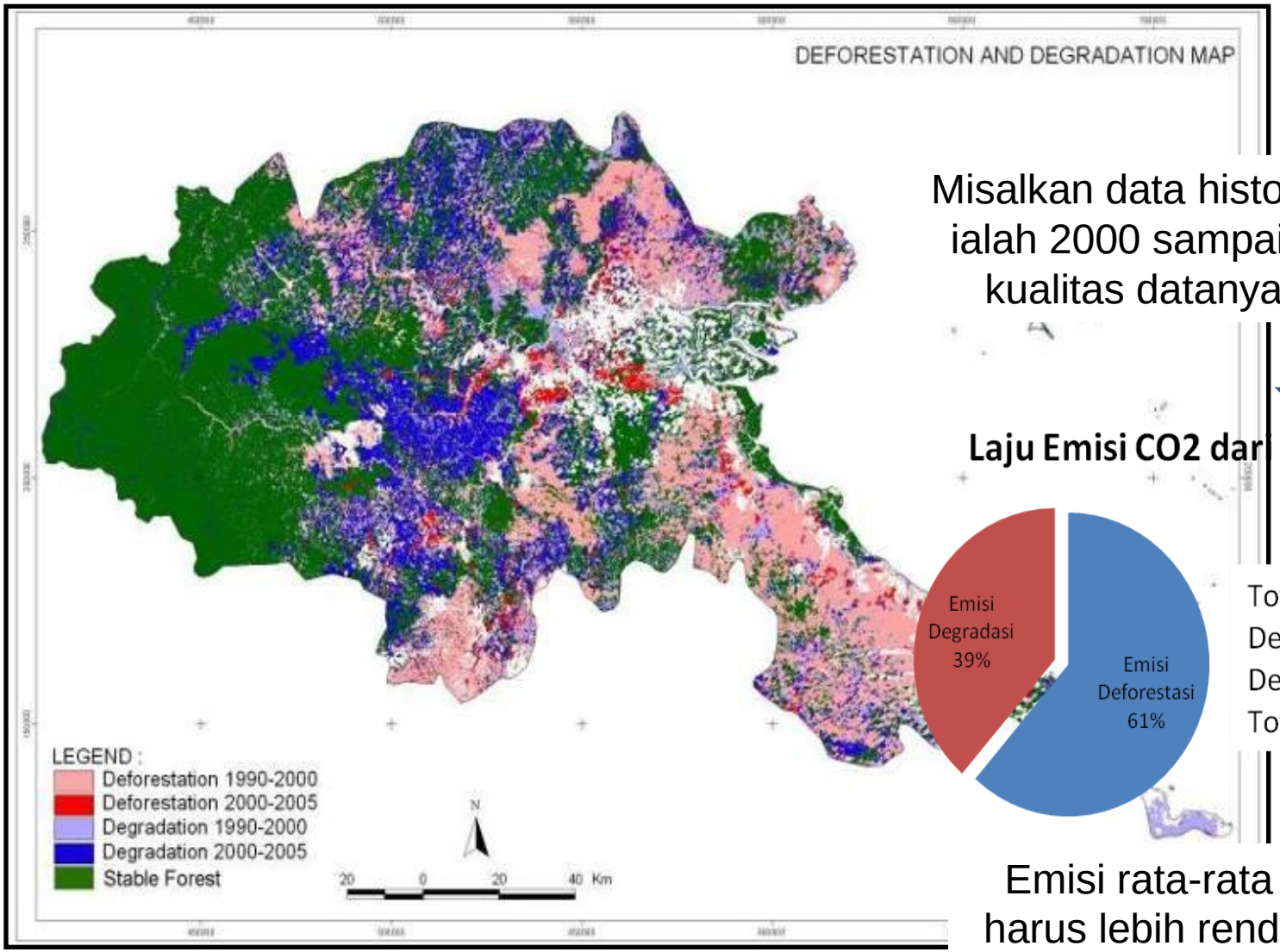
Provinces Historical Emission



Sub-national level: On going REDD Activities



Sub National REL=Historic Emission (TNC), East Kalimantan)



Misalkan data historis yang dipilih ialah 2000 sampai 2005 karena kualitas datanya paling baik

Laju Emisi CO2 dar DD (2000-2005)

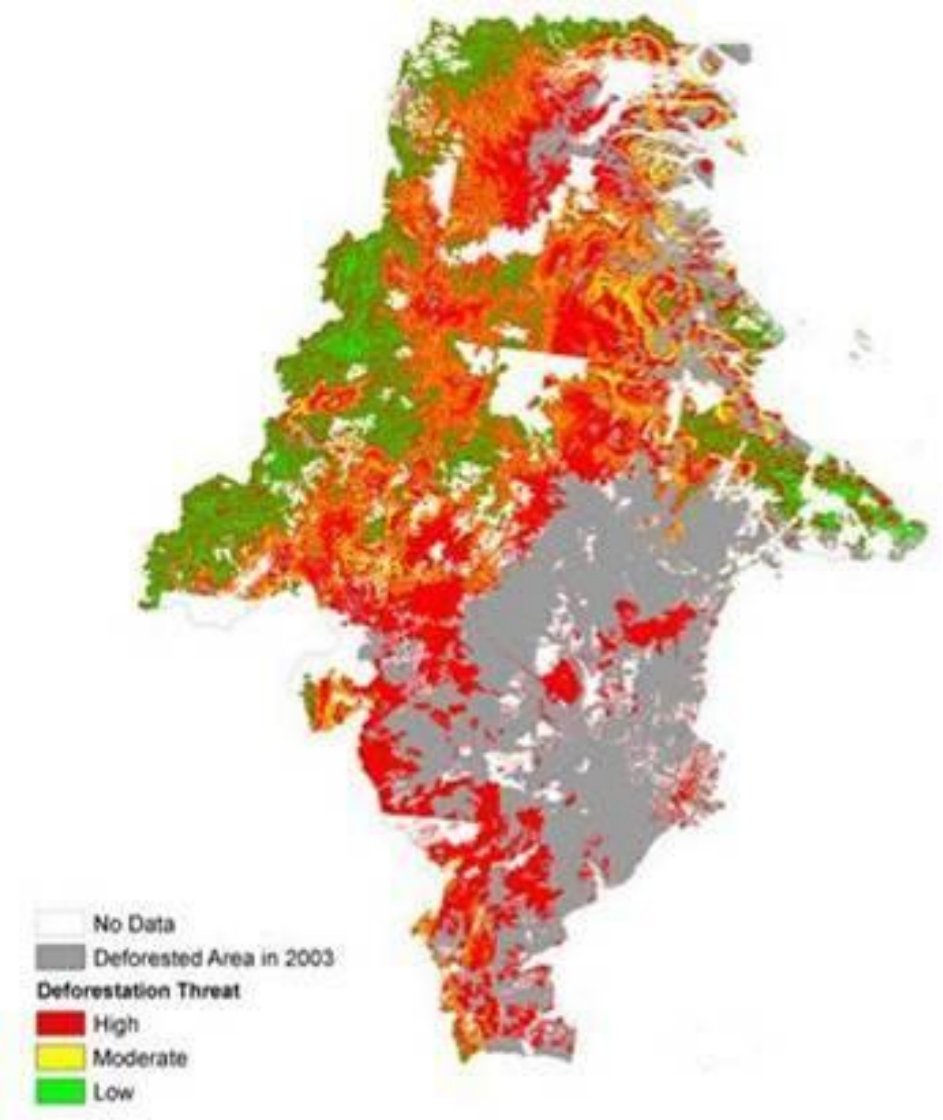
Total Emisi dari:
Def = 9.0 jt ton CO2/th
Deg = 5.6 jt ton CO2/th
Total = 14.6 jt ton CO2/th

Emisi rata-rata di masa depan harus lebih rendah dari 14.6 juta ton CO2/th untuk bisa mendapatkan kompensasi

Sumber: TNC (2009)

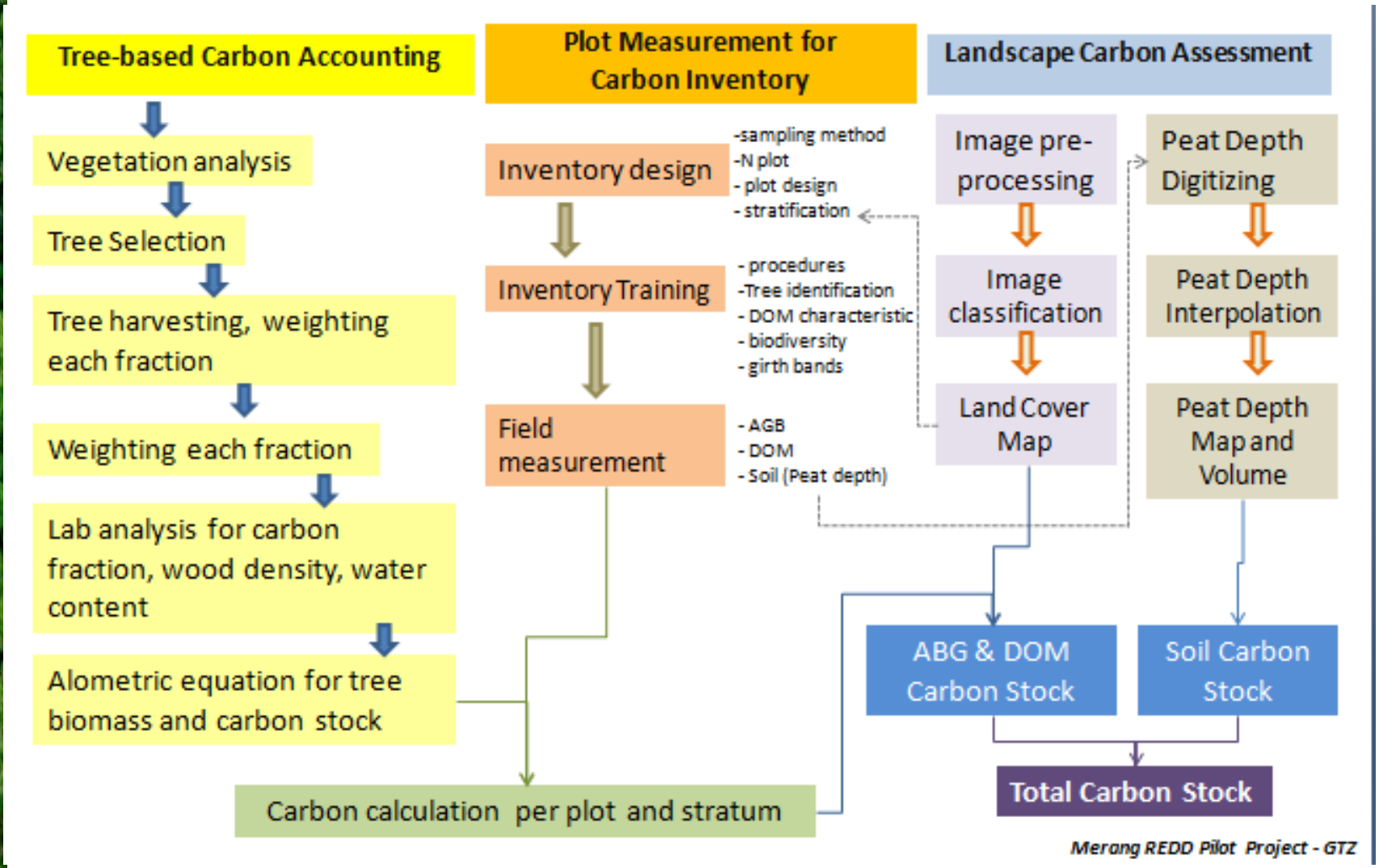
Sub National: Forward Looking based on changes of D/D driving forces

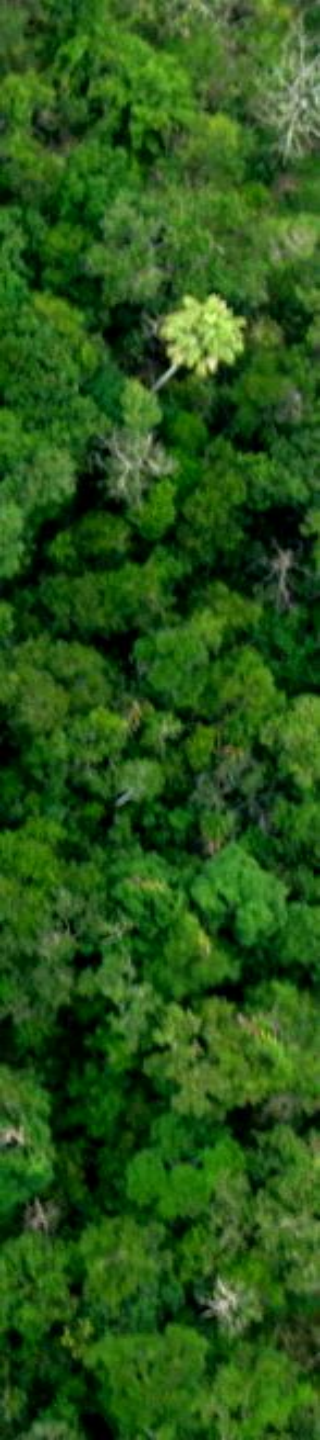
- Dengan menggunakan model hubungan antara perubahan tutupan hutan berdasarkan perubahan faktor penyebab deforestasi dan degradasi hutan seperti jarak ke pemukiman, jarak ke jalan, jarak ke sungai dll. Dengan mempertimbangkan pertumbuhan penduduk dan pembangunan infrastruktur ke depan diperkirakan wilayah berhutan yang berisiko akan mengalami deforestasi dan degradasi ialah wilayah yang merah. Adanya program REDD bagaimana wilayah yang merah tidak mengalami deforestasi dan degradasi di masa depan



Source: IFCA Report (2008)

Carbon Accounting System





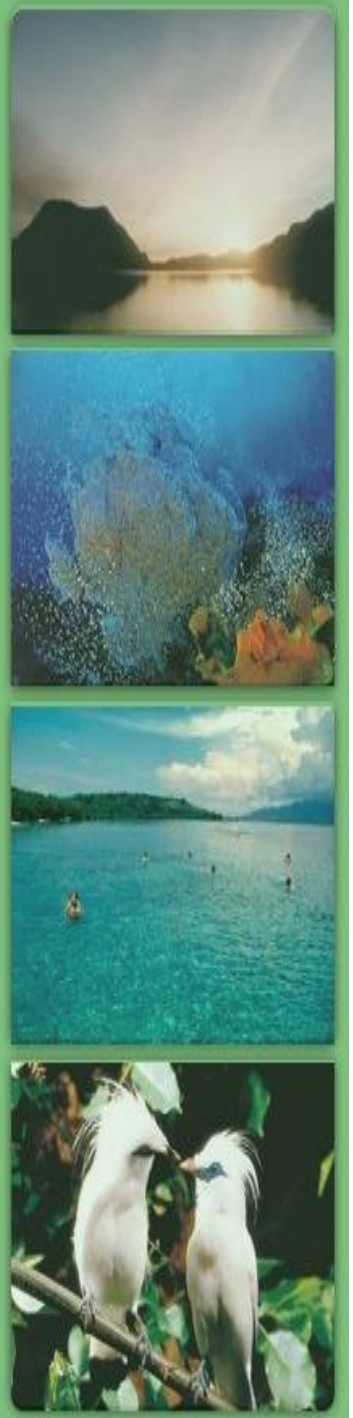
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Rata-Rata Emisi akibat Deforestasi dan Degradasi 1978 - 2008

Perubahan	Luas	C Ton	C Ton / ha
Degradasi	9.004	202.111	22,45
Deforestasi	9.949	2.407.011	241,93
Regenerasi	4.532	406.650	89,73

REDD Indonesia Strategy

- National Level:
  - **Methodology:**
    - Establishment of REL and MRV at national level
  - Provincial level:
  - **Methodology:**
  - Establishment of REL and MRV at provincial level (shall be consistent with national level)
  - **Institution:**
  - Stakeholders communication/coordination/ consultations
  - Capacity building and institutional strengthening
  - **Demonstration Activities (DA):**
  - Enhance DA to represent different bio-socio-geographical conditions at 28 provinces
  - Enhance capacity of local communities to engage in forest management through REDD activities



UNREDD Reference Emission Level

- Review of methodologies for establishing REL at national and sub-national level
- Development of methodological options to establish REL at national and sub-national scale
- Compilation of data to support development of REL
- Assessment of a provisional REL in a pilot province
- Scientific peer review of provisional REL
- Stakeholder consultations on REL methodological approach and provincial provisional REL
- Scientific peer review of REL methodological approach and provincial provisional REL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Terimakasih